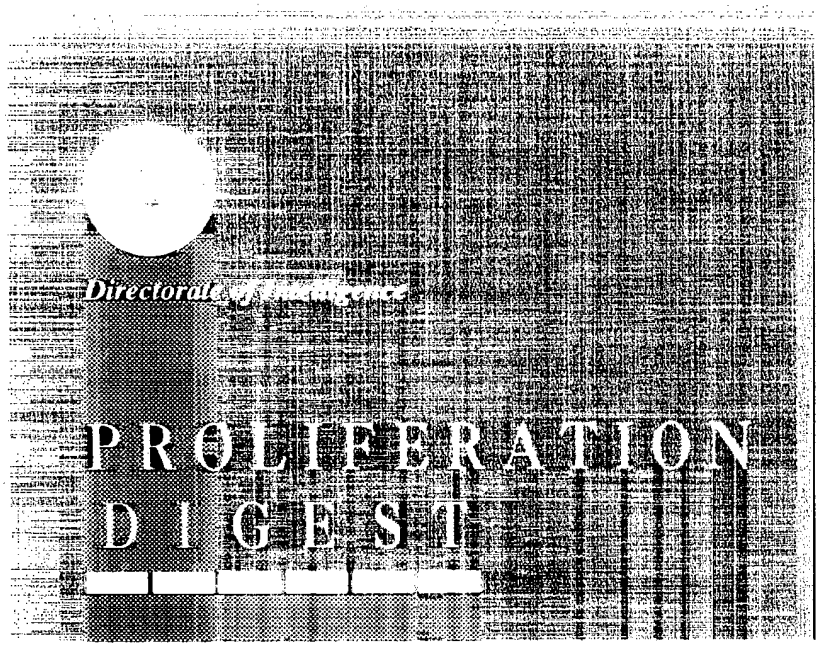
Top Secret



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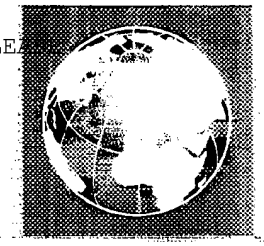

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China Seeking Foreign Assistance To Address Concerns About Nuclear Stockpile Under CTBT 37

As a result of growing international pressure to conclude a Comprehensive Test Ban Treaty (CTBT) and limited nuclear testing data, China has been scrambling in recent years to acquire the equipment and technologies necessary to maintain the credibility of its nuclear force without nuclear testing. Russian nuclear weapons laboratories remain Beijing's primary source of equipment and technology, but China also is approaching Western countries, often under the guise of joint research ventures or technical conferences. China wants to acquire US nuclear security and safety technology, and it may press for this information in exchange for cooperation in concluding a CTBT.

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Limitations of China's Nuclear Testing Program

From its inception, China's nuclear weapons program, under the direction of the China Academy Of Engineering Physics (CAEP), has been limited in scope and objectives (see inset).

that China has conducted at least 42 nuclear tests to date, far less than the number of nuclear tests conducted by the United States or the former Soviet Union/Russia.

indicates that with the exception of nuclear effects testing, China's nuclear testing program appears to have been restricted to developing warheads that met the design constraints of a particular weapon system. After the constraints of weapon size, weight, and yield were met, the design was certified for production. There is virtually no evidence that China conducted nuclear tests to study the design parameters of nuclear weapons. In contrast to US and Russian testing programs that explored a wide range of materials, configurations, and esoteric shapes to research potential weapon concepts and limits, China's testing program apparently permitted research only of those parameters essential to meeting specified warhead design criteria.

concern about China's long-term ability to maintain a viable nuclear deterrent force under a CTBT:

- Because of inadequate testing data, Chinese weapon designers probably will have difficulty anticipating technical and material problems with warhead components that could reduce the reliability of China's arsenal. For example, the lack of testing experience

Evolution of Chinese Nuclear Arsenal

With a relatively small number of nuclear tests, CAEP nuclear weapon designers have developed an effective, although limited, nuclear deterrent. Beijing currently has fielded a nuclear stockpile estimated by the Intelligence Community at between 200 and 300 weapons. Chinese designers have been able to move from the development of a simple fission warhead developed in the 1960s for the CSS-1 to the development of large, multimegaton fusion warheads for their longer range ballistic missile force (including the intercontinental range CSS-4 with a warhead). The Chinese also have developed a small, tactical enhanced radiation (neutron) warhead, which probably is intended for a short-range missile. Analysis indicates that they currently are focusing their efforts on developing a small, efficient thermonuclear warhead.

with intentionally degraded components will limit the ability of Chinese scientists to assess the effect of component degradation.

- Because Chinese high-speed electronics, massively parallel computing systems, and three-dimensional radiation-coupled computer modeling codes significantly lag behind Russian and US technology, China's ability to study critical warhead parameters and to use computer modeling to extrapolate existing nuclear test data is limited. Equipment and technology shortcomings also will hamper the ability of Chinese scientists to accurately assess the overall impact of design changes made either to correct deficiencies or to meet new mission demands.

A design or reliability flaw in any warhead in China's arsenal, which contains only a limited number of warhead models, would significantly impact the overall capability of China's nuclear force:

- Beijing, for example, has a single ICBM warhead design, and a critical design or reliability problem with the CSS-4 warhead would temporarily deny China the ability to strike at the continental United States.

- Similarly, the CSS-2 medium-range ballistic missile and the CSS-3 intermediate-range ballistic missile probably shares a common nuclear warhead, and a major design or reliability flaw in this warhead would temporarily eliminate much of China's ability to target Russia and India.

- To address a warhead-design problem for a particular missile system, China could use warheads from other missiles. For example, the CSS-2 warhead could serve as a replacement warhead for the CSS-4 if its warhead was deemed flawed—although engineering modifications to the replacement warhead probably would be necessary. If the problem is related to component degradation and reliability, China could fabricate new warheads.

Beijing Scrambling To Address Weaknesses

indicates that in recent years CAEP officials have aggressively pursued the equipment and technologies needed to evaluate and ensure the viability of their nuclear arsenal (see inset). The Russian nuclear weapons laboratories—the All-Russian Institute for Theoretical Physics (VNIITF) at Chelyabinsk-70 and the All-Russian Institute for Experimental Physics (VNIIEF) at Arzamas-16—continue to be Beijing's primary sources of equipment and technology. According to the Chinese also are approaching Western countries for assistance, and there have been unconfirmed reports that the Chinese have received nuclear-related assistance from

Russian Assistance Continuing.

all interaction with China terminated after China's underground nuclear test in October 1994.[1]

both Russian nuclear weapon laboratories are continuing to assist their Chinese counterparts.

continued to work with CAEP probably on shock waves and detonation physics, after December 1994.

providing nuclear material to the Chinese. Russian technology probably has improved China's stockpile stewardship and diagnostic-testing capabilities.

Recent evidence of continuing cooperation includes:

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[1] For a detailed look at nuclear-related technology transfers before 1995, see Proliferation Digest DI PD-001JX January 1995, "Russia's Nuclear Weapons Laboratories Providing Equipment and Technology to Chinese Counterparts."